## CLAIMS

1 (Currently Amended). A digital equalization method for estimating discrete information symbols from digital samples of a signal received over a transmission channel represented by a finite impulse response of W+1 coefficients, W being an integer greater than 1, comprising the steps of:

- determining W roots in the complex plane of the Z-transform of the impulse response;
- distributing the W roots into a first set of W-p roots and a second set of p roots, p being an integer greater than 0 and smaller than W, the roots of the second set being closer to ~~the~~ a unit circle of the complex plane than those of the first set according to a determined distance criterion in the complex plane;
- obtaining an intermediate signal by applying a first equalization method to the received signal based on a finite impulse response having a Z-transform consisting of a polynomial of degree W-p in $Z^{-1}$, having roots equal to the W-p roots of the first set; and
- obtaining estimations of the discrete information symbols by applying a second equalization method to the intermediate signal based on a finite impulse response having a Z-transform consisting of a polynomial of degree p in $Z^{-1}$, having roots equal to the p roots of the second set.

2 (Currently Amended). A method according to claim 1, wherein the first equalization method yields the intermediate signal in the form of a vector Y' of n+p samples obtained according to the relation :

$$Y' = (A'^{H} A')^{-1} A'^{H} Y$$

where n is an integer representing a ~~frame size~~ number of the discrete information symbols, Y is a vector composed of n+W samples of the received signal, and A' is a matrix with n+W rows and n+p columns having a Toeplitz structure formed from the coefficients of said polynomial of degree W-p in $Z^{-1}$.

3 (Previously Presented). A method according to claim 1, wherein the second equalization method comprises implementing a Viterbi algorithm.

4 (Previously Presented). A method according to claim 1, wherein the unit circle distance criterion, used to distribute the W roots $\square_1,...,\square_W$ of the Z-transform of the channel impulse response into the first and second sets, is expressed as a distance $\square_q$ of the form $\delta_q = 1 - |\alpha_q|$ if $|\alpha_q| \leq 1$, and of the form $\delta_q = 1 - 1/|\alpha_q|$ if $|\alpha_q| > 1$, for $1 \leq q \leq W$.

5 (Currently Amended). A radio communications receiver comprising:

- conversion means to produce digital samples from a radio signal received over a transmission channel represented by a finite impulse response of W+1 coefficients, W being an integer greater than 1;
- means for measuring the channel impulse response;
- means for calculating W roots in the complex plane of the Z-transform of the impulse response;
- means for distributing the W roots into a first set of W-p roots and a second set of p roots, p being an integer greater than 0 and smaller than W, the roots of the second set being closer to ~~the~~ a unit circle of the complex plane than those of the first set according to a determined distance criterion in the complex plane;
- a first equalization stage for producing an intermediate signal by applying a first equalization method to the received signal based on a finite impulse response having a Z-transform consisting of a polynomial of degree W-p in $Z^{-1}$, having roots equal to the W-p roots of the first set; and
- a second equalization stage for producing estimations of ~~the~~ discrete symbols of a signal carried on the channel by applying a second equalization method to the intermediate signal based on a finite impulse response having a Z-transform consisting of a polynomial of degree p in $Z^{-1}$, having roots equal to the p roots of the second set.

6 (Currently Amended). A receiver according to claim 5, wherein the first equalization stage is arranged to yield the intermediate signal in the form of a vector Y' of n+p samples obtained according to the relation:

$$Y' = (A'^{H} A')^{-1} A'^{H} Y$$

where n is an integer representing a ~~frame size~~ number of the discrete symbols, Y is a vector composed of n+W samples of the received signal, and A' is a matrix with n+W rows and n+p columns having a Toeplitz structure formed from the coefficients of said polynomial of degree W-p in $Z^{-1}$.

7 (Previously Presented). A receiver according to claim 5, wherein the second equalization stage is arranged to implement a Viterbi algorithm.

8 (Previously Presented). A receiver according to claim 5, wherein the means for distributing the W roots into the first and second sets make use of a unit circle distance criterion expressed as a distance $\square_q$ of the form $\delta_q = 1 - |\alpha_q|$ if $|\alpha_q| \leq 1$, and of the form $\delta_q = 1 - 1/|\alpha_q|$ if $|\alpha_q| > 1$, for $1 \leq q \leq W$.